

REMARKS

Claims 1-15 remain pending in the present application. Claim 1 is the only independent claim. Claims 1-6 have been amended in this reply.

SUBSTANCE OF INTERVIEW

Applicant is most appreciative of the courtesies and consideration extended to its representative, Frederick R. Handren (Reg. No. 32,874) by the Examiners during an interview at the U.S. Patent and Trademark Office on November 12, 2008. The INTERVIEW SUMMARY prepared by the Examiners, and dated November 26, 2008, provides a concise and accurate record of substantive issues discussed at the interview.

At the interview Applicant's Representative pointed out reasons why the disclosure in Iwata et al. cannot meet the requirements of the pending claims. The Examiners did not agree but said that the rejection of the claims would be reconsidered. Applicant's Representative also pointed out that the rejection is not clear, since it is based on 35 USC § 103 but reads as if it were based on 35 USC § 102. The Examiners agreed with this point and said that the rejection would be withdrawn and replaced with a rejection that is clearer.

PRIOR ART REJECTION

Claims 1-15 stand rejected under 35 USC § 103(a) as being unpatentable over US 5931746 (Soong) in view of US 6354962 B1 (Galloway et al.). Applicant traverses this rejection insofar as it might be deemed applicable to any of claims 1-15 as now presented.

Claims 1-6 have been amended to more clearly recite the invention and also to correct obvious grammatical errors. More particularly, claim 1 has been amended to call for "adjusting the thickness of finite elements of said face part at said comparison hitting positions so that the difference between the stress at said comparison hitting positions and the stress at said reference position does not exceed a predetermined value." Support for the amendments to claim 1 can be found in the specification as filed in the paragraph bridging pages 4-5 and in the first paragraph on page 24.

On pages 2-3 of the Office Action, the Examiner characterizes Soong as disclosing a method of designing a golf club head by using a computer, comprising the steps of using a club head model and a ball model both of which are composed of a plurality of divided finite elements, (fig. 3 and col. 3:58-64); executing a simulation of impacting said club head model against said ball model at a reference hitting position set in a sweet area of a face part of said club head model and a plurality of comparison hitting positions set outside said sweet area, (fig. 3 and col. 3:58-4:10), wherein the circular plate 41 is the sweet spot, and the finite element of an impact simulation must have a model of both objects being impacted, that is the ball and the club head.

The Examiner's characterization of the disclosure in Soong is incorrect and misleading. Soong discloses a club head with a face plate that is pre-tensioned. The only disclosure of using a finite element method is found in column 3, lines 62-64, in which the method is used for calculating the indentation at the center of the club face caused by impact with a golf ball. The disclosure attributed to Soong by the Examiner, "executing a simulation of impacting said club head model against said ball model at a reference hitting position set in a sweet area of a face part of said club head model and a plurality of comparison hitting positions set outside said sweet area" and "computing a stress generated in each of said finite elements by an analysis based on a finite element method, when said club head model impacts said ball model at said reference hitting position and said comparison hitting positions," cannot be found in Soong. Reference character 41 in Fig. 3 identifies a plane view of a circular face plate having a diameter of 80 mm. A sweet spot would be located within the circular plate; it is not the circular plate itself. The Examiner acknowledges that "Soong is silent to controlling a thickness distribution across the face of the head."

The Examiner cites Galloway as disclosing "controlling a thickness distribution of each of said finite elements, by comparing said stress generated at each of said comparison hitting positions with said stress generated at said reference hitting position" and as teaching that "if said stresses generated at said comparison hitting positions are larger than said stress generated at said reference hitting position, portions of said element disposed at said comparison hitting positions

are thickened, whereas if said stresses generated at said comparison hitting positions are smaller than said stress generated at said reference hitting position, portions of said element disposed at said comparison hitting positions are thinned, whereby said stresses generated at said comparison hitting positions are approximated to said stress generated at said reference hitting position."

Galloway et al. discloses a club head having a face plate with a varying thickness and discusses the relationship between stresses occurring in a club face at impact as they relate to a thickness distribution of the club face. Fig. 24 of Galloway, cited by the Examiner is a plot of von Mises stresses versus a "thickness ratio" of the face plate, where the thickness ratio is defined with reference to a reference face plate thickness of 0.110 inches. There is no disclosure or suggestion whatsoever in Galloway of "adjusting the thickness of finite elements of said face part at said comparison hitting positions so that the difference between the stress at said comparison hitting positions and the stress at said reference position does not exceed a predetermined value" or of thickening and thinning finite elements of the face part so that "said stress generated at said reference hitting position and said stresses generated at said comparison hitting positions are made substantially uniform," as required by amended claim 1.

The Examiner contends, "It would have been obvious to one of ordinary skill in the art at the time of applicant's invention to use a mathematical model instead of an experimental data to calculate the different thicknesses across the face of the golf club and reduce cost of development; and by using the data available from Soong and Galloway, and as expressed by Galloway to maximize elasticity without compromising the structural stress limits of the materials by thickening certain areas of the face." Applicant submits that there is no basis in either Soong or Galloway for a modification of Galloway that the Examiner apparently is proposing. In the Soong club head, the face plate is disclosed as being of uniform thickness, and advantageous stiffening of the face plate is brought about by pre-tensioning the face plate. There is no basis for an expectation that thinning or thickening the face plate would enhance the attributes of the pre-tensioned face plate in the Soong club head. For this reason at least, Applicant submits that a modification of the Soong club head that uses teachings in Galloway, as proposed by the Examiner, could not be regarded as obvious.

As observed above, neither of the references applied by the Examiner offers a disclosure of a method of designing a golf club in which the thickness of the face is adjusted based on calculated stresses in the club face. More particularly, neither of the applied references offer a disclosure of calculating stresses in finite elements in different hitting positions of a club face and adjusting the thickness of finite elements at comparison hitting positions to reduce the difference between stresses at the comparison hitting positions and a reference hitting position to no more than a predetermined value. Applicant therefore submits that no combination of the disclosures in Soong and Galloway could meet the requirements of Applicant's claims.

In view of the foregoing observations, Applicant submits that no reasonable combination of the disclosures in Soong and Galloway can properly serve as a basis for rejecting any of claims 1-15, as now presented, under 35 USC § 103(a).

CONCLUSION

In view of the observations and arguments presented herein, Applicant respectfully requests that the Examiner reconsider and withdraw the rejection stated in the outstanding Office Action and recognize all of the pending claims as allowable.

If unresolved matters remain in this application, the Examiner is invited to contact Frederick R. Handren, Reg. No. 32,874, at the telephone number provided below, so that these matters can be addressed and resolved expeditiously.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 .C.F.R. §§ 1.16 or 1.17, particularly, extension of time fees.

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Respectfully submitted,

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